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SCIENTIFIC & RESEARCH PROJECTS

Project No.: 06 **Year:** 2009

Project Field: Water & Wastewater

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Project Title:

Application of an Optimum Design of Cooling Water System by Regeneration Concept & Pinch Technology for Water and Energy Conservation

Abstract:

In this study, using a combination of Pinch Technology and Mathematical Programming, a new technique is presented in order to grass-root design for a cooling water system to achieve minimum total annual cost. The presented technique is further improved by using patterns from the concept for regeneration recycling in water systems. In a sense that cooling water is regenerated locally by an air cooler. Moreover, in the proposed method, optimum design. of cooling tower has been achieved through a mathematical model. Related coding is MATLAB version 7.3 was used for the illustrative example to get optimal values in the proposed cooling water design method computations. The result of the recently introduced design methodology was compared with the conventional and Kim and Smith design methods. The outcomes indicate that by using this new design method, more water and energy can be saved and a lower level of total annual cost can be reached.